

What is claimed is:

1. A head gimbal assembly comprises:

a slider having a read\write sensor;

a suspension to load the slider;

a micro-actuator; wherein

the micro-actuator comprises a piezoelectric unit with two piezoelectric elements and a support base having a base to be coupled with the suspension physically, a moving plate to be coupled with the two piezoelectric elements, and a leading beam to connect with the base and the moving plate.

2. The head gimbal assembly as claimed in claim 1, wherein the base, the moving plate and the leading beam are made from one piece of seamless material.

3. The head gimbal assembly as claimed in claim 2, wherein the seamless material is metal.

4. The head gimbal assembly as claimed in claim 1, wherein the leading beam has a structure to assist a horizontal movement of the moving plate.

5. The head gimbal assembly as claimed in claim 4, wherein the width of the leading beam is narrower than that of the moving plate.

6. The head gimbal assembly as claimed in claim 1, wherein the two piezoelectric elements are two thin film piezoelectric pieces or ceramic piezoelectric pieces.

7. The head gimbal assembly as claimed in claim 1, wherein a plurality of electrical pads is formed on each of the two piezoelectric elements.

8. The head gimbal assembly as claimed in claim 7, wherein the two piezoelectric elements have three electrical pads consisting of two voltage applied pads and a ground pad shared by the two piezoelectric elements.

9. The head gimbal assembly as claimed in claim 7, wherein the suspension

comprises a flexure having a suspension tongue, the suspension tongue has a plurality of electrical pads disposed on a predetermined position thereof corresponding to the electrical pads on the two piezoelectric elements.

10. The head gimbal assembly as claimed in claim 9, wherein the base of the micro-actuator electrically couples with the electrical pads and physically couples with the flexure by anisotropic conductive film.

11. The head gimbal assembly as claimed in claim 1, wherein the moving plate of the support base physically and electrically couple with the slider by anisotropic conductive film or adhesive bonding.

12. A micro-actuator comprises:

a piezoelectric unit with two piezoelectric elements; and

a support base; wherein the support base has a base, a moving plate to be coupled with the two piezoelectric elements, and a leading beam to connect with the base and the moving plate.

13. The micro-actuator as claimed in claim 12, wherein the base, the moving plate and the leading beam are made from one piece of seamless material.

14. The micro-actuator as claimed in claim 13, wherein the seamless material is metal.

15. The micro-actuator as claimed in claim 12, wherein the two piezoelectric elements are two thin film piezoelectric pieces or ceramic piezoelectric pieces.

16. The micro-actuator as claimed in claim 12, wherein a plurality of electrical pads is formed on each of the two piezoelectric elements.

17. The micro-actuator as claimed in claim 16, wherein the two piezoelectric elements have three electrical pads consisting of two voltage applied pads and a ground pad shared by the two piezoelectric elements.

18. A method of forming a micro-actuator comprises the steps of:

- (1) forming a piezoelectric unit having two piezoelectric elements;
 - (2) forming a support base having a base, a moving plate, and a leading beam to connect with the base and the moving plate;
 - (3) bonding the piezoelectric unit to one side of the support base.
19. The method of forming a micro-actuator as claimed in claim 18, wherein step (2) comprises the following steps: (a) forming a set of the support bases; (b) dividing the set of the support bases into a single support base.
20. The method of forming a micro-actuator as claimed in claim 18, wherein step (a) is performed by die punishing a raw sheet to a set of the support bases.
21. The method of forming a micro-actuator as claimed in claim 18, wherein step (a) is performed by: forming a multi-layer sheet consisted of raw sheet and spacer sheet alternately; and then cutting the multi-layer sheet to a set of the support bases.
22. The method of forming a micro-actuator as claimed in claim 18, wherein step (a) is performed by molding a bulk of support base bars consisted of a set of the support bases.
23. A method of forming a head gimbal assembly comprises the steps of:
- (A) forming a slider, a suspension and a micro-actuator, wherein forming the micro-actuator comprises: forming the piezoelectric unit having two piezoelectric elements; forming a support base having a base, a moving plate, and a leading beam to connect with the base and the moving plate, and bonding the piezoelectric unit to one side of the support base;
 - (B) coupling the micro-actuator physically and electrically with the slider by anisotropic conductive film or adhesive bonding;
 - (C) electrically bonding the slider to the suspension by gold ball bonding or solder bump bonding.